

Yamaguchi in fact never distinguishes between conventional and unconventional HDS. Yamaguchi distinguishes between conventionally prepared catalysts and the catalyst of Yamaguchi. The Yamaguchi catalyst may be unconventional, but the HDS process to which it is applied is entirely conventional in that it is concerned with HDS of feedstocks of high sulfur content, such as LGO containing 1.15 wt.% sulfur (column 9, lines 56-59).

Yamaguchi considers his disclosed catalyst to be unconventional and he in fact shows that his Co/Mo catalyst has enhanced catalytic activities for HDS (Example 15), but the HDS illustrating the superiority of his catalyst is entirely conventional.

Yamaguchi clearly does not disclose that nickel is a preferable Group VIII metal for HDS. In the passage from Yamaguchi cited by the Examiner (column 5, lines 7-14), it is stated that nickel, cobalt or the like is preferably chosen as the Group VIII metal element, but then goes on to say that the catalyst using cobalt and molybdenum exhibit high activity for hydrodesulfurization and the catalyst using nickel and molybdenum or tungsten show high activity for hydrodenitrogenation. Yamaguchi exemplifies the use of the nickel molybdenum catalyst only for hydrodenitrogenation.

The present invention is concerned only with HDS. It is at least partly based on the surprising discovery that Ni/Mo catalyst is superior to Co/Mo catalyst for ultra-deep HDS. This is very convincingly shown in the Declaration of Dr. Plantenga, previously submitted.

If anything, Yamaguchi would lead one skilled in the art away from the present invention, because Yamaguchi teaches and illustrates only Co/Mo catalyst for HDS, while the instant claims require Ni/Mo.

With regard to EP0870817A1, as the Examiner notes, this reference does not disclose the use of applicant's claimed additives. The Examiner, however, alleges that one of ordinary skill in the art desiring increased desulfurization would be motivated to

include applicants' additives in the process of the EP reference, i.e. combine the teachings of the EP reference with the teaching in Yamaguchi concerning use of additives, to arrive at the present invention. The Examiner states that the Yamaguchi reference illustrates that such additives are known to increase the activity of Group VI/VIII desulfurization catalysts.

However, Yamaguchi is unclear about the reaction mechanism involving the organic additive. He explicitly states that he does not understand what is going on. He indicates that it may have something to do with the prevention of agglomeration, but the causal effect between additive, metals agglomeration, and activity is unclear.

It is clear that the Examiner has misconstrued Yamaguchi as in some way dealing with unconventional, particularly ultra-deep, HDS and in the use of Ni/Mo catalyst for HDS, particularly ultra-deep HDS. The actual teachings of Yamaguchi are exactly the opposite of what the Examiner has construed.

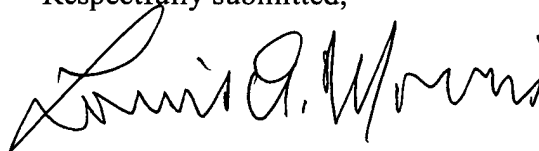
There is thus nothing in Yamaguchi which would lead a skilled person to the expectation or even the suggestion that something which, for unclear reasons, increases the activity of a catalyst in conventional HDS would also be good in ultra-deep HDS, two processes with completely different chemistry. There would thus be no expectation of success in combining EP 870 817 with Yamaguchi.

The Yamaguchi reference may illustrate that additives are known to increase the activity of Group VI/VIII desulfurization catalysts, but, as discussed above, Yamaguchi is not involved with ultra-deep HDS, nor does Yamaguchi teach use of Ni/Mo catalyst for hydrodesulfurization. To combine the EP reference with Yamaguchi, one of ordinary skill in the art would have to arbitrarily select one teaching from Yamaguchi concerning additives, while arbitrarily rejecting the entire context in which that teaching occurs, including conventional vs. ultra-deep HDS. This would be a pure and impermissible exercise in hindsight.

In conclusion, the present invention is not obvious over Yamaguchi, nor would one of ordinary skill in the art know to combine Yamaguchi with the EP reference to arrive at the present invention.

It is respectfully requested that the instant claims be allowed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Louis A. Morris". The signature is fluid and cursive, with the first name "Louis" being more prominent.

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